

AIR FORCE MATERIEL COMMAND

# LEADING EDGE

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Air Armament

Aerospace

Command & Control

## ENTERPRISE MANAGEMENT

Tying together support to the warfighter

# LEADING EDGE

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## Cover Stories



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## 4 - 11 AFMC Enterprise Management

Enterprise Management is changing the way AFMC conducts its business of providing capability to the warfighter. Gone are the days of stovepiped platforms and weapon systems. The new management framework brings capabilities together and offers an integrated solution set or roadmap to warfighters across a broad spectrum of platforms. Turn the page to see how it's all pulled together.

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Is that Elvis? No — it's a super teacher! Turn to page 20 to see how Mr. Mike Osborne inspires his young charges at Robins Elementary School, Robins AFB, Ga.



## AEDC replaces motors to improve wind tunnel testing

ARNOLD AIR FORCE BASE, Tenn. — Arnold Engineering Development Center hopes to save \$1.35 million annually with improvements made to its propulsion wind tunnel facility. The Air Force awarded \$22 million to ABB Inc., of New Berlin, Wisconsin, to implement the second part of a four-phase, seven-year sustainment program.

Two new 60,000 horsepower motors, new transformers and a 90,000 kilowatt electronic adjustable speed power system were installed in the propulsion wind tunnel facility's main drive area recently. The main drive area is home to three different types of tunnels, a 16-foot transonic, a 16-foot supersonic and an aerodynamic 4-foot transonic.

The tunnels are powered by electric motors. Besides the two newly-installed motors, the facility uses two 83,000 horsepower motors. Together the motors drive five compressors that generate wind speeds in excess of 2,000 miles per hour.

The sustainment program is scheduled for completion in fiscal year 2004. Improvements made to the supersonic wind tunnel and a new air dryer will allow the facility to continue testing round the clock. With the installation of efficient new electronic motors and an additional air dryer, the facility can anticipate an annual energy cost savings of \$1.35 million.

— Information provided by AEDC Public Affairs

## Robins cuts time on C-5 maintenance, inspections

ROBINS AIR FORCE BASE, Ga. — Returning C-5 Galaxies to the skies 30 days faster than before is the trophy Warner Robins Air Logistics Center C-5 Program Depot Maintenance workers and 19th Maintenance Squadron members here are sharing because of teamwork.

The teamwork comes as the 19th MS members started doing isochronal inspections, and other maintenance activities depot maintenance didn't require, during downtime while the aircraft is in programmed depot maintenance. Before C-5s would return home and not fly for approximately 39 days so these actions could be taken.



Photo by Mr. Steve Zapka, AFFTC

## Raptor 4005 scores a 'lethal hit' during testing

EDWARDS AIR FORCE BASE, Calif. — Behind the controls of Raptor 4005, Col. Chris Seat, director of the F-22 Combined Test Force at Edwards AFB, Calif., fires a guided AIM-120 Advanced-Medium-Range Air-to-Air Missile and destroys a subscale drone over a test range at Pt. Mugu Naval Air Station, Calif.

This missile test demonstrates the Raptor's look-down, shoot-down capability, which allows it to target, track and destroy a target that is pulling away. The combined test force at Edwards is currently testing six F-22s. Since the start of testing nearly four years ago, the F-22 test program has flown more than 1,628 hours and completed more than 729 flight test sorties.

— Information provided by AFFTC Public Affairs

The squadron works side-by-side with the depot civilian workforce by scheduling and closely monitoring how to coordinate their inspection and repair activities while the aircraft are here.

"This may seem like no great task to many people," said Lt. Col. Bob Lewit, 19th MS commander but the work his squadron members do here, in coordination with programmed depot maintenance, saves thousands of hours for the aircraft customers.

— Information provided by WR-ALC Public Affairs

## AFRL awards Eastman Kodak research contract

Rome, N.Y. — Eastman Kodak Co. of Rochester, N.Y. was awarded a nearly \$900,000 contract by the Air Force Research Laboratory Information Directorate to continue research in the field of hyperspectral imaging.

The three-year agreement will produce software to fuse hyperspectral information with other types of intelligence data.

Hyperspectral imagery involves the measurement of reflected or emitted energy. All objects reflect or emit a certain amount of electromagnetic energy.

The intensity of this energy can be measured at various wavelengths. A unique spectral "signature" allows objects or substances to be identified through spectral analysis.

Sensors are used to detect multiple wavelengths making it possible to differentiate between manmade and natural objects. It is even possible to determine various types of vegetation or building materials.

This new technology of hyperspectral imaging will significantly improve the capability of remote sensing the Earth's surface.

Besides the obvious military applications to hyperspectral technology, it is expected to open new possibilities in the fields of biomedical imaging and environmental studies.

— Information provided by AFRL Public Affairs

Gen. John Jumper, Chief of Staff for the Air Force, recently addressed the Air Force Association Symposium emphasizing Enterprise Management. (Photo by Air Force Tech. Sgt. Jim Varhegyi)



## AF Chief of Staff embraces AFMC enterprise management

**E**nterprise management. You may have heard the words and seen a few articles concerning it. But what exactly is “enterprise management?” It is an Air Force management framework in which an enterprise commander has responsibility to identify, communicate, coordinate, advocate and support implementation of crosscutting solutions, system-of-systems architecture, interoperability and common system requirements within an enterprise.

It shifts the focus from program-centric weapon system decision making to an enterprise-wide perspective. The enterprise perspective promotes greater commonality across weapon systems, focuses on delivering effects-based capability to operating commands, and reduces life cycle cost.

Why is AFMC pursuing this concept? Because our warfighters asked the question: Who do I contact if I have a single problem that affects several different weapon systems? This simple question was the genesis of the enterprise management concept.

Is enterprise management important to our customer? You bet. Just to show you what level of attention it is garnering, on November 16, 2001, Gen. John Jumper, Chief of Staff for the Air Force, addressed the Air Force Association Symposium emphasizing this very idea. During his speech, he made it clear what the warfighter needs — effects-based capabilities — and what they don’t need — stovepipes.

The following are excerpts from his speech highlighting areas enterprise management will play a key role, thereby aiding the warfighter in meeting their need of effects-based capabilities.

*Do you think that the guy on the ground, the special operator who is trying to put bombs on targets before they kill him, cares whether the coordinates arrives as a result of an air platform or a space platform? He does not. He wants the effect.*

*The sum of the wisdom of this horizontal integration will result in a cursor over the target. We won’t have to go through stovepipes. We won’t have to go through tribal representatives that sit in front of tribal workstations to interpret their tribal hieroglyphics to the rest of us poor unwashed. We will do this with machine to machine digital interfaces.*

*We can view and we can access any battle space. When air and space combine together in the right ways, we can target, we can be redundant, we can persist. We can find, fix, track, target, engage and assess anything of significance on the face of the earth. We can bring this to the joint fight in ways that no one else can. It is our job, it is our duty. It is what air and space warriors are all about. It is our strength that we unlock the intellectual potential that resides in those who can think across the dimensions of air and space, of manned and unmanned. If we can do this, it is true transformation. Right now, I would argue, these are capabilities that exist in bits and pieces. It is our job to pull it all together, to be able to think in terms of integration.*

(To view the complete transcript of Gen Jumper’s speech, go to <http://www.aef.org/symposia/jumper2001.asp>)

## AFMC leads AF transformation initiatives

— By Maj. Gen. Michael Wiedemer  
AFMC  
Director of Requirements

**E**nterprise Management is creating a “buzz” across Air Force Materiel Command’s centers, and rightfully so. The new business concept is focused on providing better support to the warfighter and smoother solutions for system shortfalls that cross multiple weapon systems, a key element in the command’s ability to meet Air Force transformation requirements.

The enterprise concept identifies AFMC’s product center commanders as single focal points for related clusters of Air Force systems like command and control and air armament systems.

### What is it?

In March 2001, AFMC, in conjunction with the Secretary of the Air Force for Acquisition and the Deputy Chief of Staff for Installations and Logistics, established a tri-led Integrated Product Team, or IPT. Over the past year, that IPT has been busy defining what enterprise management is, how it will change current day-to-day business, within the confines of the current Program Element Officer and Designated Acquisition Commander structure.

The ultimate goal of enterprise management is to be the enabler for the vision of Global Vigilance, Reach and Power. The enterprise management vision strives to achieve this by addressing requirements, issues and processes that are pervasive across multiple systems by encompassing our valuable knowledge bases located at product and logistics centers, test centers, and our laboratories.

### Mission

The enterprise management concept designates product center commanders as enterprise commanders. Their mission is three-fold. First, the enterprise commanders are the single points of contact to the warfighting community for common requirements, crosscutting system solutions, interoperability and system-of-sys-



tem architecture issues within their respective enterprises. They fulfill this role through vital partnerships with their major command users, the command's air logistics centers, test centers, the Air Force Research Laboratory, industry and academia. Second, they are the main advocates for garnering support of cross-cutting initiatives, something that has been lacking within the Air Force community.

Finally, the enterprise commanders will discuss issues that cross enterprises with other key players, including each other, thereby seeking synergistic solutions between the individual enterprises.

## Concentration

As part of the overall concept development effort, enterprise management has been defined in the context of four areas of concentration. The Air Armament Center at Eglin Air Force Base, Fla., has been designated the product center lead for the air armament systems.

Aeronautical Systems Center, Wright-Patterson AFB, Ohio, has been appointed the aeronautical systems lead. Electronic Systems Center at Hanscom AFB, Mass., will lead the Command and Control, or C2 area.

Air Force Space Command Space and Missile Systems Center at Los Angeles AFB, Calif., is the designated lead for the space and missiles enterprise. Although SMC is no longer part of AFMC, they are still a critical component in maximizing Air Force warfighting capability, and as such, remain an important player in the enterprise management construct.

The power of enterprise management comes from the varied players and stakeholders throughout the process. Headquarters AFMC provides policy and guidance to the enterprise commanders.

In addition, AFMC will serve the role of arbitrator in matters that cross our three enterprise areas. If issues crossover into the space and missiles enterprise area, then AFMC will facilitate matters between affected organizations.

## Stakeholders

AFRL is an enabler in bringing new technologies and focus areas, such as manufacturing technology and producibility, reliability and maintainability to the enterprise commanders' attention. Their expertise and innovation provides the stepping-stone for crosscutting, system-of-system solutions.

The air logistic centers play a key role in advising the enterprise commanders on issues that concern sustainment, depot support for the varied systems and depot modernization. In turn, the enterprise commander is an advocate for the depot.

Other major stakeholders in enterprise management include the warfighting major commands, Defense Logistics Agency, test centers, individual program offices, product group managers, and Program Executive Officers — basically, everyone who has a vested interest in weapon system acquisition and sustainment.

## Providing guidance

Currently, the enterprise management IPT is solidifying guidance that will enable the enterprise commanders to work effectively throughout the Air Force. The team has developed a draft policy directive currently being reviewed at the Pentagon by the Air Force director of operations. Also, an Air Force instruction is being developed to further define the roles of enterprise management. The AFI will provide guidance for implementing enterprise management across the respective enterprises.

Our command is already reaping benefits from our enterprise management efforts. Its importance was clearly evident last year during fiscal year 2003 adjusted program objective memorandum development.

Product centers prepared recommendations outlining material inputs. The commander of Air Combat Command asked what recommendations were being prepared to support the Time Critical Targeting, or TCT, focus area. Our ESC, AAC and ASC program offices jointly analyzed alternatives and developed TCT recommendations.

Then using the Enterprise Integration Council forum, they gained the center commanders' approval. TCT recommendations were then presented to the ACC commander and eventually to the Air Force Board and Council structure.

The road ahead for the various enterprises is one filled with new challenges and opportunities.

Each enterprise must find the optimum means of deploying the enterprise management philosophy across unique systems and established processes. Stovepipe barriers will be diminished and our warfighting customers will become fully engaged in enterprise management in order to ensure its success for the Air Force. While the policy directive is being coordinated and the instruction is being finalized, the IPT is also considering new means for the diverse enterprises to begin a crossflow of information.

The synergistic effect of enterprise management will provide more timely and cost effective warfighting capabilities sooner.



*As night falls over Europe, Capt. John Meier wings his C-130 from Aviano Air Base, Italy, toward the Adriatic Sea on another channel mission. The enterprise management concept enables an innovative approach to managing sustainment and modernization issues for C-130's, which have been operational for many years. (AF photo by Master Sgt. Keith Reed).*

# Aeronautical Enterprise

## ASC turns the tide in favor of warfighters

**W**ith the advent of a new, integrating concept called “aeronautical enterprise,” or AE, the business of defense acquisition is taking a dramatic, cohesive turn for the better across Air Force Materiel Command according to Brig. Gen. Rosanne Bailey, director of the Aeronautical Enterprise Program Office.

“It’s not about advertising — it’s about execution,” Gen. Bailey said. “In the past, ASC considered itself the Air Force center of aerospace excellence, but not as an enterprise agent. That is, we’ve seen ourselves as the source for aerospace platforms — but not responsible for those systems once they move on to AFMC’s air logistics centers.”

### Spanning commands

“All that’s changing now,” Gen. Bailey said. “The aeronautical enterprise concept, endorsed by the Chief of Staff and Secretary of the Air Force in early February 2002, expands the ‘reach’ of Lt. Gen. Dick Reynolds, the Aeronautical Enterprise commander, well beyond the command elements, to various platforms located within other major commands across the Air Force. Not to interfere with responsibility of reporting chains, but rather, to continue providing benefits of expertise and capabilities at ASC, throughout the lifecycle of those platforms, no matter where they may be managed from at the time.”

### Extending the future

“The A-10, our oldest and simplest fighter, is a good example of how aerospace enterprise can work to maximize AFMC’s support to the warfighter,” Gen. Bailey said. “Many thought it would be long retired by now — not only is it not retired, but it actually has a future. To incorporate the latest capabilities for a truly integrated, warfighting force of tomorrow, that system relies on the people at ASC who are developing those new abilities from scratch.”

“While the air logistic centers are absolutely qualified to sustain that system, to make sure the newest capabilities also are onboard, we need to have a solid link

back to ASC’s engineering and Air Force Research Laboratory’s scientific expertise,” Gen. Bailey said. “That’s the ‘new thing’ AE brings to the table — it’s the idea of a continuous link to the future, even in our very oldest aeronautical systems.”

“While we have grown into this situation gradually, our thought processes about how to best deal with it haven’t kept up. What aeronautical enterprise says is that we need to have a conscious, methodical way to ensure that we not only keep those old systems flying — we also keep them relevant.”

“There are other factors contributing to the need for aeronautical enterprise now,” the general said.

“The emergence of the Expeditionary Air Force, and the Air Expeditionary Forces, increase the demand for tightly-integrated fighting forces using dissimilar systems.

“This means that we can’t expect each individual system program office to go off by itself to meet its own integrated role in that fighting force without some means of tying all the pieces together,” she said.

### Sharing benefits of work

“To some degree, we are fighting that way today — but the cost of doing it over and over again for each platform simply is unaffordable,” Gen. Bailey said.

“We need to find ways to achieve common solutions — to share the benefits of work that one does with the others and balance optimization of individual systems with optimization of the ‘system-of-systems.’”



*A nondestructive inspection technician at Tinker AFB, Okla. installs a track to the Mobile Automated Scanner, or MAUS, capable of detecting hidden corrosion on a KC-135. (OC-ALC photo)*

### Defining future

“Aeronautical enterprise is a positive step in the right direction,” Gen. Bailey indicated. “I think the good news is where the Air Force Chief of Staff is taking us, in defining the future of warfighting, and in terms of desired capabilities.

“It really makes it much easier for us to meet that need, because it leaves open the way to define just how we might get there. Not just the ‘how’ of how to acquire it, but also the ‘what’ — the effect the warfighter wants to achieve in the battlespace.”

Looking out for less-than-perfect solutions to warfighter problems may require accepting alternative ways of discovering things, Gen. Bailey said.

“Some new systems may come out of a defense contractor’s independent research and development efforts. In the



past, those things may never have seen the light of day, but how foolish that would be today, since there may be great, new capabilities being created out there,” she explained.

“We know that technology turns much faster than we can keep up with it in our development cycle — so we need to be agile, and open-minded enough to grasp onto anything that has clear potential near-term, and sort out what has to be done to fit it into the warfighting system.”

While such a solution may not precisely “fit” into ASC’s acquisition pipeline, the general indicated that all aeronautical enterprise participants need to move it through the minimum number of critical processes to bring the capability to bear, while planning for how ASC can “grow” that capability and sustainability long-term.

## Transitioning

“We need to have ways of transitioning a system from almost any point in the acquisition cycle to the ‘All right, we’re taking this out to the battlespace now’ moment,” Gen. Bailey said.

“And we need to be able to plan for continuing system development, while collecting data as the warfighter uses the system real-time.”

Using aeronautical enterprise effectively will require participants not only to take a step back from the old ways of doing defense acquisition, it will mean looking at the battlespace in a very different light.

“Aeronautical enterprise will mean going from a ‘platform-centric’ view of things, to a ‘system-of-systems’ approach — a horizontally and vertically-integrated perspective of the battlefield, and the world,” she said. “From this office, we will continue to look at the aeronautical enterprise activities — downward and outward at various platforms, trying to find and work cost-cutting solutions together.”

## Enterprises connect

“But it’s less than half a step to the second part of aeronautical enterprise, which means connecting with the other enterprises, and ensuring that as we look out toward the future, trying to develop options to meet capability needs, and never sending just an aeronautic-centric option to the warfighter,” Gen. Bailey said. “It always will be an option that includes command, control, and communications, as well as space and armament considerations — mainly because we don’t go to war just as an airplane, we go to war as a communicating, flying platform carrying some armament or sensor capability. If we’re going to war that way, we need to think that way, as we create the options and present them to decision makers — and aeronautical enterprise

will ensure that we capture all the current elements and future possibilities up front.”

## Portal communications structure

“Implementing aeronautical enterprise will require heavy use of the portal intra-program and inter-command communications structure that already exists at ASC,” the general said. “Our intent in aeronautical enterprise is to remain very small, and rely on other units in the structure that also are relatively small, but which rely on the various major weapon system program offices here.

“We’ll also tie into development planning, and include the ALCs and ALC commanders — not only for their respective aeronautical platforms, but also the ground systems and trainers that support them.”

“Depending on the need, we’ll put together various ‘ad hoc’ teams or panels or integrated product teams to tackle specific problems or questions,” she said.

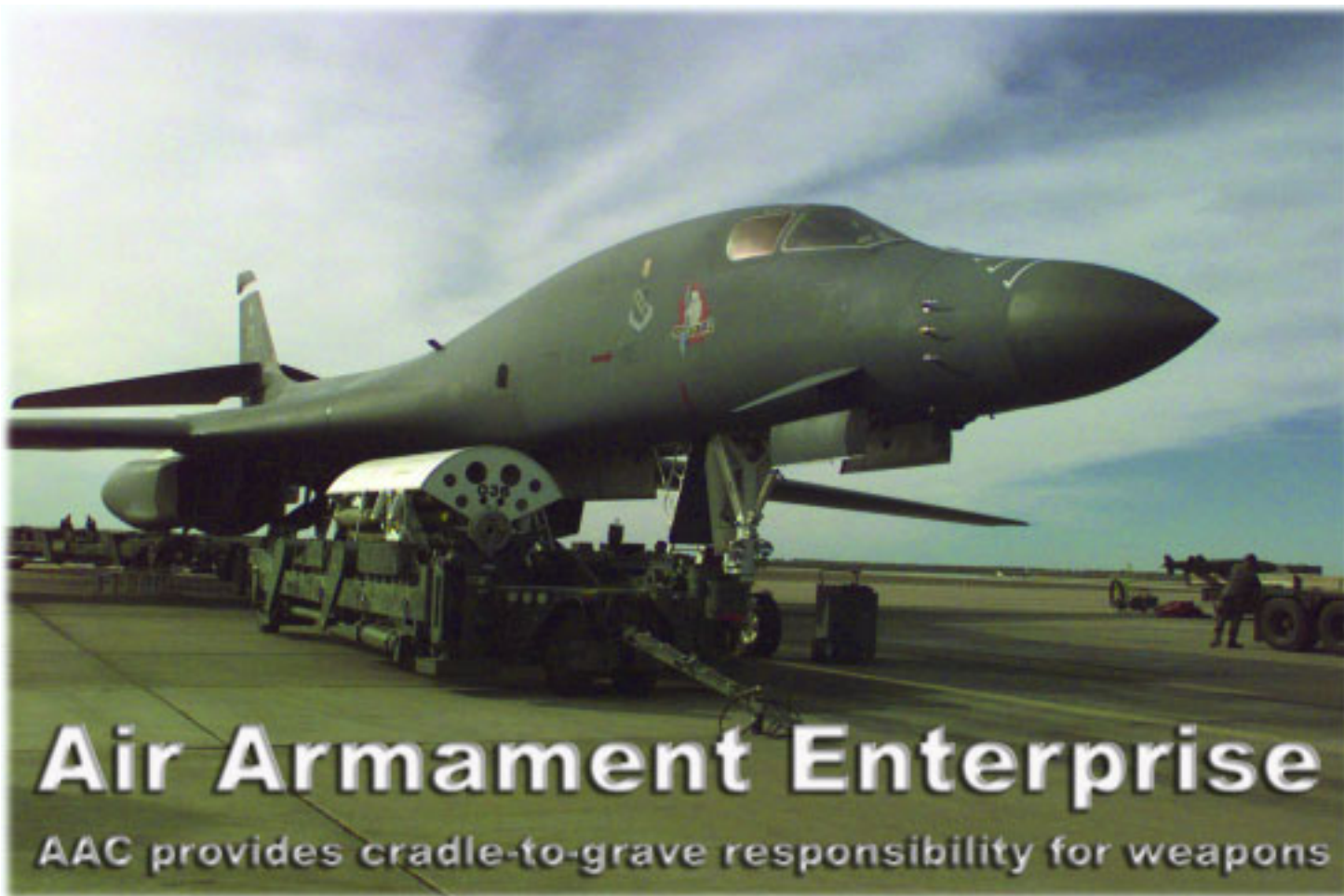
“Our intent is to be fluid, to rely heavily on people who already have another primary job, and who will execute in individual programs what we decide is the best approach,” Gen. Bailey said. “We figure that when they come to AE, they bring the knowledge and expertise of their respective organizations — plus when they return, because they were part of crafting a solution for any given problem, they will advocate it.”

“It’s not up to me — it’s up to us — to create these aeronautical enterprise solutions together,” Gen. Bailey said. “This is about more than just the acquisition side of business — we also must look cross-enterprise, because we all have a critical stake in creating and sustaining the viable, combat-ready Air Force of the future.”

— Ms. Sue Baker, Aeronautical System Center, Public Affairs.



*One of the Air Force's oldest and simplest fighters, the A-10 is an example of how aerospace enterprise works to maximize AFMC's support to the warfighter. Instead of being retired, it actually has a future due to the efforts of the workers at Aeronautical Systems Center who are incorporating the latest capabilities into the warfighter force of tomorrow. (U.S. Air Force Photo Staff Sgt. Steve Thurow)*



*Air Armament Center experts at Eglin Air Force Base, Fla., are molding enterprise-wide air armament leadership by claiming cradle-to-grave responsibility for all air-delivered weapons and implementing an annual summit process to map future possibilities.*

The Air Armament Enterprise encompasses the full life cycle of development, testing and sustainment for conventional air armament as well as sustaining nuclear weapons. The enterprise is also responsible for test range instrumentation and electronic warfare threat trainers.

### **Enterprise planning**

The annual Air Armament Summit is the key process for addressing enterprise-wide planning, initiatives and issues, according to Mr. Les McFawn, AAC director plans and programs.

Mr. McFawn said the summit brings

together senior stakeholders from across the U.S. government, international community, industry and academia to discuss, debate and make decisions about air armament and its future.

"Summit products include a 25-year roadmap for air armament and combat support systems," Mr. McFawn said. "This roadmap becomes the basis for requirements, programming and budgeting decisions to meet both operational and institutional Air Force goals."

### **Enterprise ambitions**

These goals, Mr. McFawn said, include developing a projected force structure; a technology development strategy; investment options and related infrastructure; and manpower and personnel support requirements to provide total air armament capabilities.

The summit is actually a yearlong process. Strategy panels, led at the O-6 level, that meet for six months before the summit to study the issues and provide options and recommendations to senior leadership are the heart, he said.

AAC officials said panel members

come from the U.S. government, international community, industry and academia. They review mission needs, refine concepts, assess performance and mission effectiveness, provide rough order estimates of concept costs including investment and ownership, determine technology risks and availability and develop long-term integrated, comprehensive development and acquisition strategies.

"Each selected concept includes descriptions of the activities required to move the concept through research, development, test and evaluation, acquisition, operations, sustainment and disposal," Mr. McFawn said.

### **Knowledge management**

AACs' executive management information system, or EMIS, is the primary knowledge management tool for the Air Armament Enterprise commander and community.

And according to Mr. McFawn, as a portal to the Air Armament Enterprise, executive management information system provides both designated acquisition commander and program executive officer



program experts with communication tools throughout the Air Armament Enterprise community.

Wherever the user is located and at whatever time the info is needed, Air Armament Enterprise knowledge is continually available via the executive management information system website at <https://emis.eglin.af.mil>.

### Recent initiatives

Mr. McFawn said several recent enterprise initiatives have evolved from AAC's enterprise management approach.

"Through the summit process during the last three years, AAC has advocated developing the small diameter bomb, or SDB, and early weaponized unmanned aerial vehicle technologies and capabilities demonstrations," he said.

"Gen. John Jumper, then Air Combat Command commander, supported both concepts," he said. "The close interaction between requirements personnel, acquisition personnel and technologists in the summit process paid off with a new start go ahead for the SDB program last year."

Mr. McFawn said Gen. Jumper also elected to conduct a Predator/Hellfire airborne demonstration. The Aeronautical Enterprise took the Air Force Materiel Command lead for this, with support from the Air Armament Enterprise for weapon integration issues.

### Accomplishments

"The test was a huge success, resulting in 12 hits out of 16 shots," he said.

Working with the Air Force Research Laboratory, Mr. McFawn said AAC has identified two manufacturing technology initiatives that will provide crosscutting solutions to common requirements across a wide range of air armaments.

These include improving the manufacturing yield and future manufacturing technologies for inertial measurement units and optimizing the manufacturing process among small and medium-sized supplies in areas like fuses and thermal batteries.

### Shaping the future

"These are just a few examples where the Air Armament Enterprise commander can share his vision and shape the future of air armament by using the enterprise management concept," Mr. McFawn said.

— Ms. Nancy Demonbrun, AAC/XP



*Thanks to initiatives within the Air Armament Enterprise, more accurate and lethal wind corrected munitions like those tested at Eglin are now in use in Afghanistan (top). Air Armament Enterprise concepts were also put in use to arm unmanned aerial vehicles like the RQ-1 Predator with Hellfire missiles (middle) and joint Direct Attack Munitions (bottom) used so successfully over Afghanistan.*



## **C2 Enterprise manages family of systems arming warfighters with greater capability**

**T**he leadership mantle for integrating, deploying and sustaining Air Force command and control systems has been taken on by the Electronic Systems Center with the creation of their Command and Control Enterprise.

The new organizational concept creates a family of weapon systems rather than an independent set of programs, said Lt. Gen. Leslie Kenne, commander.

The C2 enterprise is fashioned to act as an umbrella organization that will “be the visionaries, the rule-setters, the referees and the enforcers” for C2 systems, said Gen. Kenne.

### **Integrating systems**

Air Force Command & Control, Intelligence, Surveillance and Reconnaissance, or C2ISR, systems are now integrated through ESC, headquartered at Hanscom AFB, Mass. This significant change in theory and practice will reinvigorate integration and interoperability efforts by reaching across Air Force Materiel Command’s product and logistics centers as well as its end users — the warfighters who benefit from the C2ISR equipment ESC is responsible for.

Former Assistant Secretary of the Air Force for Acquisition, Dr. Lawrence Delaney, gave ESC the lead role and authority for integrating C2ISR in 2001. At that time Gen. Kenne was also named the Designated Acquisition Commander, or DAC, for C2 enterprise integration. As DAC, the general is in charge of reviewing and approving actions for priority C2 acquisition programs.

Effective C2ISR “depends on our ability to field integrated and interoperable systems in support of our warfighters,” said Dr. Delaney.

Gen. Kenne agreed, noting that integrated C2 is one of the Defense Department’s top priorities. Defense Secretary Donald Rumsfeld “recognizes transformation won’t be successful without integrated command, control, intelligence, surveillance and reconnaissance. We’re going to help him achieve that here at ESC,” she said.

### **Improving communication**

To manage the C2 enterprise, Gen. Kenne established the C2 enterprise integration office to integrate, develop, certify, deploy and sustain Air Force, joint and coalition C2 enterprise systems.

Improved communication is essential to integrating the C2 enterprise, according to the general, and ESC established an integration forum designed to focus acquisition activities on meeting warfighting capabilities — AFMC’s primary mission. The forum will also help address unique C2 acquisition challenges, cross-cutting decisions and trade-offs necessary to get capabilities more quickly to the warfighter.

This senior leadership level forum relies on inputs from architecture councils and working groups to ensure strategic goals are translated into appropriate tactical implementation. These councils and working groups also assist the forum by leading discussions between AFMC, ESC, the Aerospace Command & Control Intelligence, Surveillance and Reconnaissance Center at Langley AFB, Va., and other operational and acquisition stakeholders.

One approach showing value in the C2 enterprise was evident in a recent collaborative event, which supported Air Force efforts to increase capabilities for time critical targets, or TCTs.

TCTs are a particular area of emphasis for Gen. John Jumper, Air Force Chief of Staff. Gen. Jumper wants to reduce the time



it takes to find, target, engage and destroy targets. C2 integration and interoperability are key components of TCTs.

ESC is working with warfighting commands who use C2 weapon systems like Global Hawk unmanned aerial vehicles, JSTARS and AWACS to find and destroy targets quicker.

### Information exchange

ESC, along with Aeronautical Systems Center at Wright-Patterson AFB, Ohio, and the 497th Intelligence Group at Bolling AFB, Washington D.C., established a single coordinated input of TCT recommendations that were integrated across programs. This was done by exchanging information early in the process so that budgeting input was delivered.

ESC also developed the C2 enterprise portal tool to enable more effective planning, fielding and sustainment of integrated and interoperable Air Force C2 systems, said Col. Brad Butler, deputy commander for C2 enterprise integration.

The portal is an interactive, web-based database capable of capturing real-time program schedules that the program offices use to manage the delivery of the weapon systems. The delivery dates relative to other C2 systems will allow us to determine the availability of a critical capability.

The portal also will capture metrics, which allows detailed

insight into the status of a system relative to critical capabilities and interoperability. In its current state, the C2 enterprise portal provides three primary services: interoperability metrics; program schedules and calendars as they relate to critical capability statements and Air Force focus areas; and access to a variety of documents supporting integration activities across the C2 enterprise, such as AF Vision documents, C2 enterprise direction and guidance, and roadmap views.

"One of the elements necessary for effective C2 system integration is a common tool that will enable C2 decision makers, program managers, Program Executive Officers, DACs and warfighters alike, to have insight into the requirements, schedules and status of various programs that will be delivering critical capabilities to the field," said Col. Butler.

The new C2 enterprise portal was designed around the Air Force portal and became operational in December 2001. Gen. Jumper and many other Air Force general officers will address a C2 summit sponsored by ESC and the Air Force Association this month in Danvers, Mass.

To learn more about the C2 Summit, visit <http://paulreverafa.horizons.com>. Also, visit the C2 Enterprise Portal and request an account at <https://c2info.hanscom.af.mil>.

— Capt. David Buchanan, ESC/CXP.

## Enterprise Management 'road show' eases Air Force concerns, gathers feedback

The Aerospace Enterprise Management "Road Show" is making the rounds to ease concerns about the way the Air Force will conduct future business. It presents information regarding development of aerospace enterprise management process and solicits feedback from those affected by the changes.

The show came to Tinker Air Force Base, Okla., late last year. "This was our opportunity to hear information directly from the aeronautical enterprise leaders and influence the development process," said Oklahoma City Air Logistics Center Vice Commander Brig. Gen. Loren Reno. According to Mr. Al Rich, deputy director for the aircraft management directorate here, the road show did just that. "The whole key to this process is going to be communication and I think the road show folks did an outstanding job of tearing down the walls and easing some concerns about the future of the aeronautical enterprise management process," he said.

In response to more sophisticated and diverse threats to the United States, the Defense Department and Air Force are moving to a capabilities-based planning approach — ensuring the ability to generate necessary battlefield effects regardless of who the adversary is and where the war occurs.

This requires unprecedented levels of interoperability and integration of Air Force weapon systems and supporting activities.

The goal is to shift focus of Air Force decision making from a program-centered perspective to one that is enterprise-wide. Through a recent memorandum signed by Dr. Lawrence Delaney, former assistant secretary of the Air Force for acqui-

sition, and Gen. Lester Lyles, Air Force Materiel Command commander, four new enterprises were created.

Those new enterprises include Aeronautical, Air Armament, Command and Control, Space and Missile. The memo also designated respective AFMC product center commanders as enterprise commanders.

"What we're trying to do is identify what common system requirements, what system of systems architectures and what cross-cutting solutions might be available," said Col. Rosanne Bailey, director for the Aeronautical Enterprise Program office at Wright Patterson AFB, Ohio.

"What we want to do is integrate investment planning into the process to leverage our dollars," Gen. Bailey said. The guiding principal behind enterprise management is "we want to stay lean. We need to bring in people who know about those systems and can provide input to solving problems" she said.

The process includes concept of employment, which defines processes and products, and the concept of execution, which defines roles and responsibilities. The guiding principles behind enterprise management are intended to augment and refine current capability and weapon system planning processes and structures, not replace them. The approach does not change any command relationships, but enhances those that exist.

Gen. Bailey said the plan is to implement the process "in layers," but the key is to remain flexible. Incorporating existing forums will require integration over a two-year period, she said.

— Mr. Darren Heusel, OC-ALC Public Affairs



*Azure and Theodore Augustus enjoy an afternoon playing on an outdoor playground at Edwards AFB, Calif., funded by YOFAM. Their father, Capt. Linus Augustus, a physician's assistant, works in the 95th Medical Squadron. (Photo by Master Sgt. Anne Ward)*

## Edwards receives QOL funding from YOFAM

EDWARDS AIR FORCE BASE, Calif. — Edwards recently received funding for quality-of-life programs from the Air Force Materiel Command's Year of the Family budget. The Year of the Family is in its second year with \$2.5 million for programs approved command wide.

The new funding will contribute to the purchase and installation of indoor play equipment, expanded pre-school and toddler playgrounds, additional free childcare and teen and youth mentoring program training. The free childcare will support families who want to attend one of the Edwards Community Outreach Team events.

Teens-to-Teens is a program structured to provide teenagers a peer-to-peer counseling environment to learn coping skills.

Although the money is aimed at improving the quality of life at all AFMC bases, the commander is not content to stop there, indicating there is still much to be accomplished through Year of the Family programs.

— Information provided by AFFTC Public Affairs

## Veteran promoted to senior scientist position

ROME, N.Y. — Dr. Michael Wicks, a 22-year veteran of Air Force research and development at Rome, was named senior scientist for sensor signal processing.

Dr. Wicks will be responsible for signal processing algorithm development for all sensors including radar, infrared and optical — developed or supported by AFRL sensors Directorate. While directorate management offices are located at Wright-Patterson AFB, Ohio, Dr. Wicks will continue to work with Sensors personnel at the AFRL Rome Research Site.

— Information provided by AFRL Public Affairs

## Air Force unveils new IT purchasing site at MSG

MAXWELL AIR FORCE BASE, Ala. — Ordering and buying new information technology products will be standardized because of a new Web site called Air Force Way located at <https://afway.af.mil/>.

AFWay is the Air Force's re-engineered process for managing and purchasing these products, and is expected to improve procurement and purchase approval processes, as well as ensure positive asset control and accountability of hardware and software prior to delivery.

AFWay provides standard, streamlined acquisition of IT solutions that conform to Air Force standards. The process is integrated with the Air Force IT inventory tracking system improving visibility and control of spending.

AFWay was built as a joint initiative between Air Combat Command and SSG. ACC, as the lead command, represents the needs of Air Force customers and will work with the major commands to ensure future releases meet their needs.

MSG and SSG are also partnering to provide user training for this new system, traveling to centers ensuring users understand their role as they work within AFWay business process.

— Information provided by SSG Public Affairs

## AFRL-Rome awards 'link discovery' contract

ROME, N.Y. — The Air Force Research Laboratory Information Directorate has awarded a \$2.9 million

contract to SRI International of Menlo Park, Calif., for research to enhance law enforcement investigations.

The 30-month contract, "The Link Analysis Workbench," is funded by the Advanced Research Projects Agency of Arlington, Va.

"SRI will integrate commercial-off-the-shelf hardware and develop computer software to increase capabilities for link discovery," said Mr. Robert Hawkins, program manager in the directorate's information and intelligence exploitation division. "Link discovery is the ability to determine patterns of evidence of criminal activity based on looking at information from different documents."

The envisioned technology would improve automated searches of messages, reports and other sources.

— Information provided by AFRL Public Affairs

## Brooks awarded \$60 million for bioterrorism

BROOKS AIR FORCE BASE, Texas — Gov. Rick Perry announced a \$60 million federal funding package to fight bioterrorism at a press conference recently. The Health Resource Services Administration provided \$8.3 million to help hospitals prepare for bioterrorism and \$51.4 million was given by the Centers for Disease Control and Prevention to analyze readiness to bioterrorism that will enhance community-hospital response.

The Lightweight Epidemiology Advanced Detection & Emergency Response System web-based technology is being developed at Brooks for early detection of covert biological warfare incidents or significant infectious disease outbreaks. The system could be used to track hospital bed availability, coordinate emergency response among multiple agencies and help pinpoint the source of an outbreak.

Other technologies developed have been used in support of post-Sept. 11 homeland defense activities. Among them are Ruggedized Advanced Pathogen Identification Device, or RAPID, that can detect in about two hours disease-causing microorganisms, and the Remote Casualty Location Assessment Device, or RCLAD, which was used to search the rubble for World Trade Center victims.

— Information provided by 311th HSW



# Global Hawk development on-track, aided by operational debut in OEF



**W**ith a deployment debut behind them, Global Hawk test experts at the Air Force Flight Test Center at Edwards Air Force Base, Calif., are pushing forward with development of the high-altitude unmanned aerial vehicle.

Global Hawk is now in the engineering, manufacturing and development phase of defense acquisition, or EMD. The UAV is designed to provide battlefield commanders with near real-time, high-resolution, reconnaissance imagery.

Flying at extremely high altitudes, Global Hawk can survey large geographic areas giving military decision-makers the most current information about enemy resources and personnel.

## Lessons learned

The 452nd Flight Test Squadron, part of the global vigilance combined test force, or CTF, at Edwards, is working to incorporate many of the lessons learned from the system's recent deployment in support of Operation Enduring Freedom into the developmental test process.

The deployment was unique in that Global Hawk was employed in theater by nontraditional crewmembers mostly from the test and evaluation community.

Operational and developmental military testers supported by contractor maintenance and support crews provided com-

batants the new reconnaissance capabilities throughout the Global Hawk deployment.

## Final version

According to Lt. Col. Michael Guidry, commander of the 452nd and director of the Global Vigilance CTF, the experience is allowing the team to develop a production representative vehicle that is exactly what the warrior needs. Such a vehicle is the final version before it heads to low-rate initial production.

"As part of EMD we would have conducted certain tests but because of recent events we were able to accomplish these evaluations through actual operational flights," said Col. Guidry. "This will significantly benefit the test program in that it minimizes the required sorties necessary to complete the test process and allows us to make the most out of those sorties we do fly."

The Global Hawk team is looking into methods that will provide better data-link connectivity between the UAV and its ground-based operators, he said. "Part of the solution is to simplify and miniaturize the units that house ground operations," he added.

In addition, the team is focused on improving data-collection techniques and response times by bringing more automation to the image-collection process.

"We are there to collect imagery, but it isn't beneficial if we can't deliver that picture or image to the warfighter," said Col. Guidry.

## Initial production

To ensure a successful EMD phase, the test force at Edwards is continuing to work closely with the reconnaissance systems program office at Aeronautical Systems Center, Wright-Patterson AFB, Ohio. The program office assumed program control in 1998 and is responsible for moving Global Hawk toward low-rate initial production.

Col. Wayne Johnson, director of Global Hawk at the system program office, agrees the operational experience the entire Global Hawk team has had can only benefit the future program.

From the requirements and development stages through the transition to operations and sustainment, Col. Johnson said the early deployment will help the team mature Global Hawk into one of the finest intelligence, surveillance and reconnaissance assets in the world.

"Integral to this maturity is the test experts at Edwards and the insight they provide into how well the design meets the requirement," Col. Johnson added.

**Global Hawk continued on page 14**

# Raptor gets green light on refueling capability

The F-22 Combined Test Force expanded the Raptor's operational capability once again as it certified the aircraft for hot pit refueling operations at Edwards Air Force Base, Calif. After nearly 5 months of research, training and demonstrations, certification will allow the Raptor to be refueled on the ground while the engines are operating.

According to 1st Lt. Roy Recker, chief of F-22 Logistics Test and Evaluation, the new certification is a first for the F-22 program and expands the current operational capability of the platform.

Most often, hot pit refueling is done on a parking pad, adjacent to the aircraft runways. After hot refueling, the F-22 can return to the skies, to continue expanding the flight and avionics envelope.

"Many fighter units employ hot refueling operations in conjunction with re-arming and re-loading ordnance, also known as an integrated combat turn," said Lt. Recker. "Together, integrated combat turns and hot refueling get the airplane back in the air in minimum time."

The Raptor was initially scheduled for integrated combat turn certification after April of 2003 during the dedicated initial operational test and evaluation phase of testing. However, hot pit refueling tests have been brought forward in the test schedule as an initiative to add flexibility in test execution when tanker support may not be available, Lt. Recker said.

"When tankers are down for maintenance or not available because of real-world operational requirements, hot pit refueling allows for multiple sorties per test mission," Lt. Recker said. "Although test missions with airborne tanker support are more efficient, hot pit refueling between several sorties will go a long



**Raptor 4005 pulls into the hot pit refueling area at Edwards AFB, Calif. (Photo by Mr. Kevin Robertson, AFFTC)**

way towards providing the needed flight hours per test mission."

For the F-22 test force, earning the hot pit refueling certification meant meeting three phases of requirements. First, the physical location of the hot refueling operation is certified to ensure it meets ground safety and fire department requirements. The second phase certifies that the maintenance, fire department and fuels personnel involved in the operation have been properly and safely trained. The third phase certifies aircraft is in the proper configuration to be refueled while the engines are running.

In addition, aircraft that operate in hot pit refueling areas also undergo a cursory check, upon landing. This check serves as a brief, but thorough, safety check to ensure the aircraft is ready to be refueled and can return to the air.

"The aircraft and operator benefit from two different crews giving the plane these quick inspections before, during and after hot refueling operations," Lt. Recker said.

— Article courtesy of the F-22 Combined Test Force

## **continued from page 13**

"Their developmental and early operational tests are extremely important in fielding a tremendous and much needed asset to the war fighter."

In addition to enhancing connectivity and data-collection, Col. Guidry said the test force at Edwards is further developing the test plan and making improvements to its overall mission planning process. These preparations will assist with a smooth integration of another test bird expected to arrive at Edwards this summer. The next vehicle following the summer arrival should be production representative, said Col. Guidry.

### **Key to success**

According to Mr. Bob Ettinger, manager of Global Hawk flight test for lead contractor, Northrop Grumman, the key to successful testing of the system is the continued collaboration of military personnel, civil servants and government contractors.

Mr. Ettinger's contractor team was part

of the initial cadre of pilots and mechanics that established the Global Hawk CTF in 1997.

### **From the beginning**

Also on board from the start were members of the 31st Test and Evaluation Squadron, part of Air Combat Command. These operational testers are still actively involved in testing of the vehicle today.

"I am absolutely convinced that working hand in hand with the military makes for a more robust airplane," said Mr. Ettinger, who also aided in the development and flight-testing of the F-16.

"We work very hard to make a good design. However, it's hard for us to visualize all of the things the system will be used for and all of the limitations the operational Air Force will face in the field," he said.

Another priority for Col. Guidry was to establish that the squadron not only supports the Global Hawk, but also the Airborne Laser and Unmanned Combat Aerial Vehicle, or UCAV, test forces. The

452nd FLTS stood up in October of 2000 to combine all of the UAV development expertise in one location.

"My number one goal in re-establishing the 452nd FLTS was the development of a solid squadron foundation through the proper integration of all the players," Col. Guidry said. "With several test forces each made up of contractors, operators and testers, you still have to have your squadron basics. It lends a sense of unity, camaraderie and a sense of pride."

### **Looking ahead**

Col. Guidry said the future of the squadron lies in integrating all of its assets into one combat force, where Global Hawk could send data directly to other weapon systems.

"Our mission is to further enhance the Air Forces' tenets of information superiority and precision engagement through the fielding of the Global Hawk, UCAV and Airborne Laser Weapon system," he said.

— Ms. Leigh Anne Bierstine, AFFTC Public Affairs



# History-making flight transforms civilian aircraft into flying hospital

A commercial U.S. Airways 767 jet conspicuously looming on the Lackland Air Force Base, Texas, runway recently made Air Force air evacuation history during the initial training flight of the Civil Reserve Air Fleet, or CRAF, and inaugural flight of the Aeromedical Evacuation Support Platform, or AESP.

The Sept. 11 terrorist attacks, in part, provided the impetus to exercise for the first time a CRAF airliner reconfigured as an air ambulance. The 767 jet is one of about 40 aircraft that serve the federal government's emergency backup transportation needs for mass casualty evacuations. Delta Airlines and U.S. Airways are the contract CRAF carriers for aeromedical evacuation.

Before the aircraft's maiden voyage, Raytheon Aircraft Integration System personnel re-configured the plane under 311th Human Systems Program Office's oversight at Brooks AFB, Texas.

## The conversion

"RAIS installed the aeromedical evacuation shipsets in Greenville, Texas after all but a few seats were pulled out of the airplane at Charlotte, N.C. where the flight originated. They transformed it into a medical evacuation transport aircraft," said Master Sgt. Ernie Lozares, SPO's aeromedical consultation team superintendent.

Sgt. Lozares' team installed the redesigned platform developed by Stryker Medical of Kalamazoo, Mich., providing a stable evacuation platform for spinal cord injury patients.

Air Mobility Command is the lead agency for aeromedical evacuation and the primary AESP customer.

Sgt. Lozares said reconfiguring a 767 with AESP, supported by the patient loading stem, was a worthwhile experience for Raytheon, the program office and the U.S. Airways crew.

"This is the first time we have flown medical crews in a reconfigured 767 for the sole purpose of training aeromedical evacuation crew members, flight attendants and critical care teams. Valuable lessons learned will help us effectively operate when called upon for deployments," Sgt. Lozares said.

## Learning by training

"We haven't exercised the CRAF in five years," said U.S. Airways flight attendant Ms. Susan Phelps-Sikes, CRAF training plan author and part of the U.S. Airways crew that participated in the cross-country CRAF training mission. The air ambulance crew, including the SPO's chief flight nurse Maj. Denise Augustine and AMC flight nurses, conducted the CRAF training roadshow at Scott, McChord, Charleston, Travis and Andrews AFBs before their final stop at Lackland AFB.

"We have learned so far that Air Force emergency procedures are pretty close to our procedures. Working with the military has been a valuable experience," Ms. Phelps-Sikes said. "It's been very exciting in learning how good our training is compared with the military," added flight attendant Ms. Jane Taylor. During the 767's San Antonio visit, technicians, flight nurses, physicians, and personnel from the U.S. Air Force School of Aerospace Medicine toured the aircraft.

— Mr. Rudy Purificato, 311th HSW



*Critical Care air transport team students from the U.S. Air Force School of Aerospace Medicine prepare for a Civil Reserve Air Fleet training mission aboard a reconfigured U.S. Airways 747 jet. (Photo by Mr. Rudy Purificato)*

## AFRL bears its own torch at Winter Olympics

A six-member Air Force Research Laboratory contractor team showcased technology that could impact “basically everything that people use” as they meet the world at the 2002 Olympic Winter Games held in Salt Lake City during February.

Transiting 1,700 miles from Wright-Patterson Air Force Base, Ohio, to the international games site, the team trucked in and assembled what experts have dubbed a marvel of engineering called the WB-4 with four instrument packs. WB-4 stands for Whole Body Scanner.

Looking like something out of Star Wars, the scanner consists of two towers supporting four television-sized instrument heads and a central raised platform where the subject stands to be scanned.

“It scans the body and makes a three-dimensional image on the computer screen, and we can extract any number of measurements from that image,” said Mr. Scott Fleming, Olympic visit project leader and technician from Sytronics, Inc. As the subject is scanned, a mechanism lowers the four sensor heads from its 10-foot height down to the ground, using photo, laser and infrared instruments to create an electronic rendition of the subject on a nearby computer.

“The Air Force uses it as a measuring tool to redesign cockpits, pilot seats, G-suits, helmets and oxygen masks,” said Mr. Fleming.

The hope of scanning subjects in top physical form drew the team to Salt Lake City. Scanning the Olympic Athletes and adding their information into our database was our goal,” he

said.

Having recently completed a four-year study and accumulating more than 12,000 scans, the team has had its share of globe-trotting. “We traveled all around the United States to 12 sites, and two sites in Europe to gather scans of everyday, normal people,” Mr. Fleming said as he spoke to a group of visitors.

The benefactors of this lengthy study, aside from the Air Force, are the automotive, apparel and airline industries. “The information we provide will allow them to redesign car seats, airline seats, clothing, work stations, chairs, tables, basically everything that people use,” said Mr. Fleming.

While at the Olympic games, visitors in the Air Force scanner tent were invited to listen to a brief description of the device and its purpose, then to step up on the platform to be scanned. Then after having any questions answered, they walked away with a full-color printout of their scan, a three-dimensional image of themselves with the Olympic and Air Force logos as a souvenir.

Visitors’ reactions ranged from awe to excitement.

“I think it’s amazing, the level of detail it can pick up with just one pass,” said Mr. Jason Fagenbush, a Medical Sergeant and Emergency Medical Technician.

“It’s awesome,” said 11-year-old Derek Hansen after seeing the scanner up close with his family.

“I like the clothing aspect, because I’m petite, and things generally don’t fit exactly right, so I’m excited about that,” said Ms. Lynette Simmons, a staff member in the Olympic media operations center.

Cyberware, Inc. built the scanner under Air Force contract, and Sytronics, Inc., engineers operate it.

— Capt. Jeff Sandrock, AFMC Public Affairs



*Left: Medical Sergeant Jason Fagenbush and his fellow emergency medical technician Mr. Jefferson Halladay stand motionless as the WB-4 Whole Body Scanner scans them together. Above: Project team leader Mr. Scott Fleming points out the details of the image created by the scanner to Mr. Wei-Cheng Chen, president of Version Timeless Sculptures, whose display tent neighbored the Air Force’s scanner tent at the Salt Lake 2002 Winter Games. (Photos by Capt. Jeff Sandrock, AFMC Public Affairs)*



*A Navy LC-130 Hercules comes in for a landing on skis at McMurdo Station, Antarctica, shortly before its crash in December 1971. The aircraft spent 17 years buried in snow and ice before being recovered.*



## Aircraft resurrected for third life

*More than 21 years after crashing in the Antarctic tundra, an LC-130 Hercules is being called back to active duty.*

The aircraft spent more than 17 years buried in snow and ice in Antarctica, then spent the last three years in the Arizona desert.

Under the watchful eyes of personnel at the Aerospace Maintenance and Regeneration Center, Davis-Monthan Air Force Base, Ariz., it was prepared to fly again in March.

### Joint service

Ski-equipped LC-130 aircraft are the backbone of Operation Deep Freeze, a joint military operation of the U.S. Armed Forces and the New Zealand Defense Forces providing logistic support for the U.S. National Science Foundation's Antarctic program.

Previously under naval control, the New York Air National Guard's 109th Airlift Wing assumed authority for all LC-130s in March 1999.

Built in 1959, this LC-130 was sta-

tioned at McMurdo Station, Antarctica.

On Dec. 4, 1971, the aircraft was at a small strip 750 miles from home when the pilot attempted a jet-assisted takeoff, using rockets to give the aircraft the speed it needed.

At about 50 feet off the ground, two of the rockets broke off and hit an engine.

The propeller was torn off, another engine was damaged and debris ripped holes in the fuselage, said Senior Chief Petty Officer Frank Brooks, the Navy's quality assurance and maintenance chief at AMARC.

"The Hercules crashed in the barren, icy landscape and was seriously damaged, but miraculously, the 10-man crew escaped unharmed," Chief Petty Officer Brooks said.

Foul weather prevented a team from reaching the crew for more than three days. The crew was eventually rescued, but the NSF officials determined it would not be cost-effective to salvage the plane.

### A twenty year rest

The elements quickly claimed the damaged bird, covering it in snow and ice for nearly two decades.

In 1989, the NSF needed another LC-

130. A cost analysis and a few mechanics and pilots determined that the cost of resurrecting the lost LC-130 would be about \$10 million, compared to more than \$30 million for a new aircraft.

Soon after, a crew was on-site to excavate the frozen plane and begin breathing life back into it. Two months later the plane flew out and re-entered service for the NSF.

### Out of the cold

In 1999, the aircraft left its frozen home and was retired to a warmer climate at AMARC, a 2,600-acre open-air warehouse for 4,500 aircraft valued at \$27 billion.

Now the plane will be used to fly transport missions at Naval Air Station, Point Mugu, Calif., Senior Petty Officer Brooks said.

AMARC crews inspected and preparing the aircraft for a test flight in early March.

Many aircraft are stored at AMARC so they can be returned to flying status.

— *Tech. Sgt. B. Coors-Davidson, 355th Wing Public Affairs*

# Operational and test worlds integrate at Edwards

**A**uto rolls, tail slides and inverted spins don't typically make their way into operational fighter sorties. But as three F-15 pilots from Mountain Home Air Force Base, Idaho, saw first hand Feb. 5, it's all in a day's work for their counterparts in the test world.

The pilots' two-day visit to Edwards Air Force Base, Calif., is part of a unique training program started by the 416th Flight Test Squadron. The program is a one-on-one exchange designed to bring operational pilots here to expose them to the role developmental test plays in supporting the warfighter.

In turn, test pilots are traveling to fighter bases across the Air Force to stay in touch with today's warfighters by flying tactical missions.

According to Lt. Col. Troy Fontaine, operations officer at the 416th FLTS, the exchange is designed to open communication lines between the operational world and the test and evaluation community.

During their visit, Capts. Brian Van Matre, Jerry Reedy and Brian Farrar of Mountain Home's 390th Fighter Squadron, spent their first day at Edwards in a classroom learning the finer points of advanced aircraft handling. The next day, each pilot took to the skies with an Edwards test pilot.

While none of the academic briefings presented are new to the operational pilots, the difference, said Col. Fontaine, comes in the air.

## First hand experience

"We put them in situations where they are typically not allowed to fly in," Col. Fontaine said. "Edwards is the only place in the world where you can do some of the advanced handling maneuvers that we have all learned about. But here they are pushing the flight envelope in the air and experiencing the fundamental stability of the airframe for themselves."

For Capt. Van Matre, his flight with test pilot Maj. Dan Daetz revealed how easy it is to get an aircraft in an unpredictable spot. Upon pulling out of a routine tail slide maneuver, their F-15 started to spin upside down. Maj. Daetz applied a recovery procedure to get out of the inverted spin and got the jet level with plenty of altitude to spare.



*Test pilot Maj. Dan Daetz (left) of the 416th Flight Test Squadron at Edwards AFB, Calif., briefs Capt. Brian Van Matre, of the 390th Fighter Squadron at Mountain Home AFB, Idaho, after their F-15 flight at Edwards. Capt. Van Matre was one of three Mountain Home fighter pilots who visited the 416th as part of its exchange program with the operational community. (Photo by Ms. Leigh Anne Bierstine, AFFTC Public Affairs)*

"It's definitely not something very many (fighter) pilots have done," Capt. Van Matre said. "It's a good experience for us to see that it can happen and that you can recover if you do the right thing."

## Gaining credibility

In turn, Col. Fontaine and Maj. Daetz agree the program is helping them and their fellow testers maintain credibility with the tactical Air Force.

"We need to know how a jet is being used today," Maj. Daetz said. "We can read about it but it's much better to actually talk, on a regular basis, to the operational pilots who are flying it everyday."

Having been an operational pilot before coming to the test community, Maj. Daetz said it is easy for the test side of the house to get sheltered from the end user.

"We have to keep our mind on why we are here and have a vision beyond just meeting the specifications of our test plans," Maj. Daetz said. "If I go back to being an operational pilot, I want to know that I have helped to make a better airplane."

Mountain Home's Capt. Van Matre adds that participating in the exchange

program is also giving the tactical world a preview of future weapon systems.

During the trip he and his colleagues toured Edwards to see some of systems in development and spent time with students at the U.S. Air Force Test Pilot School.

"It helps for us to get out here and meet with the people who are working to make what is coming down the road better," Capt. Van Matre said. "That is definitely a good thing for us to see."

## Flexibility

The program has been building over the last three years, and test pilots have hosted pilots from Nellis AFB, Nev., as well as the Strike Eagle squadron at Mountain Home. In turn, they have traveled to fighter squadrons at Shaw AFB, S.C., and Elmendorf AFB, Alaska. Col. Fontaine notes the program is flexible and the content is geared toward the needs and interests of each fighter squadron.

"The more people we can get involved from the operational side, the more the Air Force will benefit in the long run," Col. Fontaine said.

— Ms. Leigh Anne Bierstine, AFFTC Public Affairs



## Brooks physicist uses science to master powerlifting

He's probably the only American physicist who can dead lift 450 pounds. In fact, Dr. John Taboada is perhaps the only retirement-age scientist whose idea of a senior discount is getting 10 percent off on a set of barbells.

At an age when many people have become "dead weight" as couch potatoes, this 57-year-old Air Force Research Laboratory optical researcher has applied scientific principles to master powerlifting. "I think I now know what helps lifters execute the mechanics of a dead lift. The bar bends upward for a few milliseconds. The energy applied goes into the bar which is delivered to the weight," Dr. Taboada explains.

While powerlifting physics is simple, he learned the hard way how difficult the sport is to master. Before 1992, his only experience 'throwing his weight around' was as a Fox Tech High School athlete, playing basketball and tennis. "Back then there was no weight training," he recalls.



Dr. John Taboada 'chalks up' for a better grip before attempting a 450-pound dead lift. (Photo by Mr. Rudy Purificato)

After graduation in 1962, he abandoned sports for a career as an atomic and molecular physicist, earning a Texas A&M University doctoral degree.

A Brooks Air Force Base, Texas, scientist since 1968, Dr. Taboada wasn't active in sports here until he hired an electrical engineer. "Mr. William Robinson, the state champ in powerlifting introduced and coached me in the sport," he said.

Powerlifting filled a dormant need. "Since my youth, I've enjoyed competitive sports. But, in later years I didn't have time for team sports." Powerlifting became a natural progression.

### A natural progression

"At first, powerlifting didn't seem like a very exciting sport. I quickly realized there is excitement in pushing the body's capacity to lift weight without hurting yourself," he admits. Powerlifting's three events of squat, bench press and dead lifting weight initially appeared to be a daunting challenge for the 5'7," 140-pound Dr. Taboada.

"If you stop to assess the actual weight you're lifting, it's frightening. It seems that muscles and bones might not support the weight. There's a definite fear factor."

Dr. Taboada learned his first important lesson: intense concentration is required. "You have to mentally eliminate distractions while commanding your muscles to respond to the challenge. It's an explosive process; tremendous exertion is applied to the weight in just a few seconds."

Before Dr. Taboada tackled his first weight, he had to condition his body. "It's a matter of systematically training your body at incrementally increasing levels. At first, I had to overcome the challenge of pain and exhaustion. It takes quite a bit of mental stamina to stick with the training program."

### Starting slow

As a rookie powerlifter, Dr. Taboada could only squat lift 60 percent of his body weight and bench press and dead lift about 100 pounds. Within three years, he was lifting twice his body weight. He accomplished this with a regimen of twice weekly one-and-a-half hour workouts.

"I had to develop various muscle groups. However, I did injure myself," he admits when describing how he deluded himself into believing he could lift 400

pounds. "I herniated a disk in my back. I was almost paralyzed. My doctors told me my weightlifting days were over."

His physicians didn't take into account Dr. Taboada's perseverance. "I was determined to continue powerlifting." He prescribed his own physical therapy, featuring isometrics without painkillers.

"The pain was almost unbearable. My doctors feared I was going to become a paraplegic," he said. Two years of recovery therapy followed. In 1995 Dr. Taboada entered his first state meet.

"I thought I was ready," he recalls. His scientific nature had eclipsed any reason a man in his early 50s may have developed in life. "I'm an experimentalist by occupation. I experimented on myself to see if at my age I could enhance muscle mass.

Dr. Taboada succeeded in developing muscle mass, increasing his body weight from 140 to 189 pounds over a five-year period. Nonetheless, being stronger didn't fully prepare him for the reality of competition. "My first meet was a disaster. I didn't realize the criteria needed for a successful lift until I saw it demonstrated."

### Learning through doing

He also made a tactical mistake in attempting too high a lift in his first event. "I had squat lifted 310 pounds in training, but those lifts weren't 'official.' Once you declare an opening weight, you can't go down in weight on the next attempt." What resulted was a meet-ending hamstring pull on Dr. Taboada's first attempt.

"I learned several lessons, including the importance of stretching." He also learned proper movements associated with each event.

By 1999, Dr. Taboada had placed first in his weight and age category. Most important to him was learning proper balance and leverage needed in each event. A state meet in December earned him a personal best 450-pound dead lift equaling his best lifts with a 340-pound squat and 205-pound bench press. In doing so, he qualified for the National U.S.A. Powerlifting meet in March.

"I'm stronger than I've ever been in my life," said Dr. Taboada who may be Brooks' version of the former diminutive Olympic weightlifter nicknamed 'Pocket Hercules.'

— Mr. Rudy Purificato, 311th HSW

# ***Super Teacher:*** **Robins educator takes learning to another level**



*Mr. Mike Osborne, an instructor at Robins Elementary School, Robins AFB, Ga., performed as Elvis at a "We Love America" program presented by the school. (Photos by Ms. Sue Sapp, WR-ALC)*

**T**he typical day in many classrooms consists of a teacher talking and students listening, reading, writing and perhaps even a trip to the chalkboard.

In Mr. Mike Osborne's fifth-grade classroom, there are very few typical days. On the contrary, the elementary school students at Robins Air Force Base, Ga., who matriculate Mr. Osborne's class experience integrated learning and applied knowledge throughout the year.

"I like to always have a theme each year," Mr. Osborne said. He admitted the class theme is often aviation since they are on a military installation and the opportunities for learning hands-on are plenty. The theme is usually touched on throughout the year in a variety of projects, activities and assignments.

## **An integrated approach**

Though the class may have a theme each year, there are many projects and experiments for the children to do that are far from the theme. Each assignment gives the children a chance to use everything they learn.

"I like to integrate my subjects," Mr. Osborne said. "I like to relate it and review it." He keeps the students on their toes by constantly returning to subjects mentioned throughout the year, he said. "I always go back to things so they learn it's important to listen and pay attention."

An annual vegetable garden is one example of his integrated

learning style. The students learn biology, geology, social economics, marketing skills and math. They learn about the plants and different soils that are better for growing certain plants. They research to discover when to plant and which vegetables are going to sell. All the students are responsible for the garden and the advertising and sale of the vegetables.

## **Doing it better**

Mr. Osborne expects nothing but the best from his students. "I expect quality, not quantity," he said. "The more time you spend on quality, the less you have to worry about quantity."

Being demanding of the students and encouraging them to enjoy learning can help the children as well as the future of our world as a whole, Mr. Osborne said. "If we impact them with the desire to learn, they will go away with that. When you put that in your society, you can only make your society better."

Mr. Osborne's projects command attention, according to Ms. Jeanne Roberts, Robins Elementary School principal, and she thinks this has been positive for the students. "He certainly creates a lot of enthusiasm for the students with his hands-on activities. It's really very relevant to their everyday lives."

In addition to the projects and experiments, he takes time with



each student and lets them know everything they do is important. "I like to focus on all of them," he said. "That's why I became a teacher, to teach."

Mr. Osborne has been teaching in many different capacities all his life. He started in the Robins education system as a teacher's aide and has created his own style of teaching by learning from his peers. "Good teachers help each other become, and stay, good teachers," he said.

He grew up with a good work ethic in a poor family. "What I learned early on was that you have to depend on yourself," he said. He started with a paper route, then worked as a movie usher and really began getting mechanical in a jewelry shop. That is where he started to get into hands-on work engraving and repairing jewelry and watches. To this day he still works with clocks.

Mr. Osborne has been in the Navy, holds a black belt in Karate and is a certified diver. He earned his bachelor's degree in geology at Georgia Southwestern and earned his master's from Fort Valley State University.

— Ms. Rebecca Yull, WR-ALC Public Affairs



(Top) Students from Mr. Osborne's fifth-grade class feel the heat emanating from a hole full of mirrors reflecting light from the sun. The copper ball just above their heads is filled with water and turns at a rapid pace when heated to a certain temperature. (Below) Mr. Osborn and his students fill a volcano with ingredients to make it erupt. (Photos by Ms. Sue Sapp, WR-ALC)

## Tinker contract negotiator takes hobby to higher level

Mr. Glennan Wrinkle is a contract negotiator in the operational contracting division at Tinker Air Force Base, Okla., during the work day. But one place he won't negotiate is on the tennis court.



Mr. Glennan Wrinkle

### He's a champion

He took up the game of tennis four years ago and today he holds gold medals in state and national championships.

Mr. Wrinkle won the men's intermediate tennis championship in the 1999 Sooner State Games, qualifying him for the State Games of America held in August in St. Louis. There, he earned the top prize in the same division.

Mr. Wrinkle said he stayed in shape and prepared for a year because he knew the competition would be tougher in the national contest. Since he won gold at the Sooner State Games, he honed his game by playing in nine United States Tennis of America tournaments around the state of Oklahoma. He won six of them and sported a 22-3 record.

He said winning at the national competition was a relief. "It was good for all that preparation to actually be rewarded with a win," he said.

### A late bloomer

Mr. Wrinkle grew up in Vinita, Okla., where tennis was not a sport at his high school.

"I've always liked the sport but never had a chance to play," he said. "There's no tennis in Vinita — just mainly football, baseball, basketball and wrestling."

He learned the sport when he got a part-time job at a tennis center in Oklahoma City while attending Mid-America Bible College.

"I picked up tennis as a hobby and had free lessons right there at my job," he said.

### Finding sources of inspiration

His tennis inspiration is Mr. Jeff Cohlmiya, the tennis center's head professional.

"Jeff's always been behind me — a good inspiration, a great coach," he said. "If there's something wrong with my game, I can always go back to Jeff and we'll go out to the court and work on it."

He also receives inspiration from watching the pros on television. His favorite player is Andre Agassi, who he has admired since the late 1980s when Agassi, Michael Chang, Pete Sampras and Kim Courier came on the scene. He also "appreciates" Lleyton Hewitt's combative nature.

Mr. Wrinkle plans to play in three or four tournaments in an USTA adult league this year, but said he has no aspirations to turn pro or to compete in the Olympics.

"I'm not that good," he said.

He is good enough to share with others what he has learned. He said he enjoys teaching private lessons as the assistant head pro at Earlywine Tennis Center.

— Mr. Ray Dozier, OC-ALC Public Affairs

# Lessons learned in Vietnam save lives today in Operation Enduring Freedom

**M**any U. S. soldiers and airmen paid a dear price for knowledge that now saves lives, according to a retired U.S. Army Special Forces soldier. He said they perfected the techniques and tactics used today by U.S. Special Operations Forces in Operation Enduring Freedom.

Maj. John Plaster served in the top-secret Studies and Observations Group, or SOG, for three one-year terms from 1968-1971. He recently spoke at the U.S. Air Force Museum as part of the Wings and Things Guest Lecture Series.

"I led small intelligence gathering teams behind enemy lines along Ho Chi Minh Trail in Laos, or into enemy sanctuaries in the 'neutrality' of Cambodia or North Vietnam," he said.

## Dangerous missions

In the 24 months he served, he ran 22 missions behind enemy lines, including surveillance of enemy roads and water-

ways; searching for major enemy installations, such as base camps, depots and truck parks; performing bomb damage assessments after B-52 strikes; directing air strikes upon prime targets, emplacing beacons and sensors to assist the U.S. Air Force interdiction program; and kidnapping key enemy personnel for interrogation.

"People like to pretend we learned nothing in Vietnam," Maj. Plaster said, "but with all that experience, the opposite is true. I was putting in the same 15,000 pound bomb, the so-called 'Daisy Cutter' (BLU-82 Commando Vault) bombs, 30 years ago in exactly the same manner they do today, except we had radar systems, not GPS back then."

## They paid a high price

Sadly, Sgt. Plaster said that members of the 5th Special Forces Group paid a high price for lessons they learned in combat.

"The lessons learned in World War II had been forgotten, so we had to learn a lot at considerable cost," he said.

"The basic tactics we perfected in the studies and observation group are used today as we speak by special operations units around the world — whether its means of infiltrating or extracting

teams, sharp-shooting techniques, the tactics by which we move — these were learned at a cost of blood back in the days of SOG."

Three hundred soldiers were lost in his unit. Fifty-seven of those individuals are missing in action.

## The days were long

During his last year of service in Vietnam, he flew with Air Force forward air controllers aboard O-2A and OV-10 forward air control aircraft in support of SOG cross-border operations.

"Because we Army special forces types did not face crew rest limits, I amassed a surprisingly high 450 combat air missions, 1450 hours, and directed hundreds of air strikes to include twice inserting BLU-82 Commando Vault bombs," Sgt. Plaster said.

"Had it not been for some courageous A-1 Skyraider and forward air controller pilots and Air Force UH-1N crewmembers of the 20th Special Operations Squadron, Ban Me Thuot, South Vietnam, many SOG veterans, including myself, would not be alive today."

Twenty-nine years after their missions in Vietnam, the SOG received recognition for their heroism and sacrifice.

Just last April at Ft. Bragg, North Carolina, those remaining SOG members received a Presidential Unit Citation for their "extraordinary heroism, great combat achievement and unwavering fidelity while executing unheralded top secret missions deep behind enemy lines across Southeast Asia."

— Ms. Susan Barone,  
ASC Public Affairs

*Maj. (Ret.) John Plaster recently spoke at the U.S. Air Force Museum at Wright-Patterson AFB, Ohio. He talked about the high price many service members paid for knowledge learned during the Vietnam conflict that is saving lives today (Courtesy photo).*





# ABL manager wins national award

For one test expert at Edwards Air Force Base, Calif., aiding in the development of one of the Air Force's premier weapons systems is job satisfaction enough.

But Mr. Kevin Montoya's work on the Airborne Laser test and evaluation program is earning him high marks on a national level — the National Defense Industrial Association has named him Civilian Tester of the Year.

Mr. Montoya is the project manager for test and evaluation of the Airborne Laser program at the Flight Test Center. He was cited for his work in developing directed and high-energy laser test infrastructure and capability where none has previously existed. Mr. Montoya and the Airborne Laser Integrated Test Force at Edwards recently completed a 17,000 square foot, Systems Integration Laboratory, where the laser will be tested in entirety on the ground prior to flight-testing.

Mr. Montoya said there is no doubt the importance of the Airborne Laser program helped catch the attention of the association. "The ABL program is a priority for the nation," he said. "It is a breakthrough weapons system and if it proves successful it will change the way we do things in the future."

According to Col. Steve Cameron, the 412 Test Wing commander at Edwards, Mr. Montoya's work is providing a model for future Flight Test Center directed energy test programs.

Mr. Montoya agrees the NDIA nod is recognition not only for his own hard work but also for the role the Flight Test



*Mr. Kevin Montoya (right), project manager for test and evaluation of the airborne laser program at Edwards AFB, Calif., and Mr. Chris Roder, facility supervisor for Wyle Labs, review plans for the laser's ground pressure recovery assembly, which is under construction at Edwards. (AFFTC photo)*

Center plays in supporting the nation's defense.

"This award is a tribute to the test expertise we have here at Edwards," Mr. Montoya said. "Hopefully this will be the

beginning of further recognition by the Air Force and the rest of the test community."

— Ms. Leigh Anne Bierstine, AFFTC Public Affairs

## New invention pays off for Edwards mechanic

An invention to prevent wear of aircraft landing gear tires earned an Edwards Air Force Base, Calif., member a U.S. patent and a cash award.

Mr. Mike Almen, 795th Civil Engineer Squadron heating, ventilation and air conditioning work leader mechanic, recently learned his invention received approval from the U. S. Patent Office. He also received a \$300 cash award from the innovative development through employee awareness program here.

To solve the tire wear problem, wheels would have to rotate as close to ground speed as possible before landing, said Mr. Almen.

"I came up with several plans, but in the long run, the design I settled on was a metal plate that could be bolted to the inside

of the wheel rim," he said. "The plate would have several curved vanes, or fins, equally spaced to capture the natural airflow and would provide tire rotation before landing."

Mr. Almen's invention was designed to be a wind-driven, self-rotating device he hoped would extend tire and landing gear life while providing a more controlled and smoother landing. Using his more than 18 years of aircraft maintenance experience with Boeing Co. and Rockwell, he developed a plan to prevent premature tire wear.

Although several inventions of this type relating to self rotating airplane tires have been done before, none are exactly like this, according to U.S. Patent Office records.

— Master Sgt. Anne Ward, AFFTC Public Affairs

"It is our job, it is our duty.  
It is what air and space warriors  
are all about. It is our strength that  
we unlock the intellectual potential  
that resides in those who can think  
across the dimensions of air and space,  
of manned and unmanned.

If we can do this, it is true transformation.  
Right now, I would argue, these are  
capabilities that exist in bits and pieces.  
It is our job to pull it all together, to be  
able to think in terms of integration."

Gen. John Jumper  
Chief of Staff

